Logistic Regression from scratch:

* In linear regression we make a linear function using $y = mx + b$ or $f(w,b) = wx + b$

* logistic regression is a classification algorithm which is based on linear regression

but instead of predicting a number we predict 0 or 1.

- for that we use the sigmoid function which translates the numerical value of linear regression to 0 or 1

Sigmoid function:

$$S(x) = \frac{1}{1+e^{(-x)}}$$

=> using this function in linear regression

$$S(f(w,b)) = \frac{1}{1+e^{-f(w,b)}}$$

$(f(w,b) = wx+b)$

$$= \frac{1}{1+e^{-wx+b}}$$

graph:

Cost function in logistic regression :

* Instead of MSE we use Cross entropy i.e =>

$$J(w,b) = \frac{1}{N} \sum_{i=1}^{\hat{}} \left[y^i \log(s(n^i)) + (1 - y^i) \log(1 - s(n^i)) \right]$$